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(54) Batch-type heat treatment apparatus and method for controlling it

(57) A reaction tube 2 comprises heaters 31 - 35, and temperature sensors Sin1 - Sin5, Sout1 - Sout5, and receives a wafer boat 23. A controller 100 estimates temperatures of wafers W and temperatures of the temperature sensors Sin1 - Sin5 in 5 zones in the reaction tube 2 corresponding to the heaters 31 - 35 by using the temperature sensors Sin1 - Sin5, Sout1 - Sout5 and electric powers of the heaters 31 - 35. Based on relationships between estimated temperatures of the temperature sensors Sin1 - Sin5 and really metered temperatures, functions f1 - f5 expressing the relationships between the estimated temperatures and the really metered temperatures are given for the respective zones. The functions f1 - f5 are substituted by the estimated wafer temperatures to correct the estimated wafer temperatures. Electric powers to be fed to the respective heaters 31 - 35 are respectively controlled so that the corrected wafer temperatures are converged to target temperature trajectories.

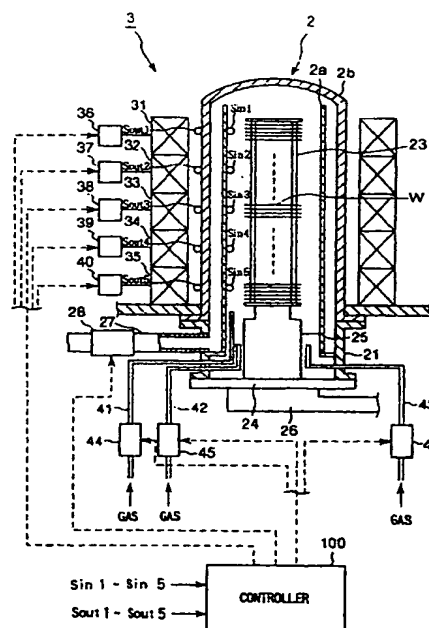


FIG. 2



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# EUROPEAN SEARCH REPORT

Application Number  
EP 01 20 3454

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
A, D	US 5 517 594 A (SHAH SUNIL C ET AL) 14 May 1996 (1996-05-14) -----		H01L21/00 F27D19/00 C23C16/46
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			C23C F27D H01L C30B G05D
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>24 November 2003</b>	Examiner <b>Patterson, A</b>
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

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